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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,805	02/09/2004	Hong Jiang	81075405	9249
28866	7590	05/26/2006	EXAMINER	
MACMILLAN, SOBANSKI & TODD, LLC ONE MARITIME PLAZA - FIFTH FLOOR 720 WATER STREET TOLEDO, OH 43604			PIPALA, EDWARD J	
			ART UNIT	PAPER NUMBER
			3663	

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/774,805

Applicant(s)

JIANG ET AL.

Examiner

Edward Pipala

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 and 20-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 17-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/9/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This Office action is in response to Applicant's election received on 3/17/06.

#### ***Election/Restrictions***

1. Newly submitted claims 20-32 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the invention of claims 20-32 is independent and unrelated to that of previously submitted claims 1-9 and 17-19 in that the original invention is related to operating a partially engaged clutch with respect to temperature, whereas the newly submitted claims 20-32 do not make mention of temperature based clutch control at all, instead relying on throttle position, throttle rate and vehicle speed, which are not limitations found in original claims 1-9 and 17-19. The invention of claims 1-9 and 17-19 would be classified in class 192 (clutches and power stop control), whereas the invention of new claims 20-32 would be classified in class 701. It is then appropriate to conclude that these two groups of claims presently submitted by Applicant comprise two separate independent and unrelated inventions and that restriction is proper and appropriate.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 20-32 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Information Disclosure Statement***

2. The IDS submitted by Applicant has been fully considered by the Examiner, as indicated by the accompanying initialed copy of Applicant's list of references.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2, line 5, there is no antecedent basis for "the second output".

Furthermore, it seems that the instance of "second" in line 5 should be deleted so as to refer to "the output" of the preamble of claim 1, and because line 9 also refers to "the second output" (which should be changed to "a second output" if "second" is deleted from line 5).

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 17-19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Maguire et al. (USPN 6,095,946).

With respect to independent claims 1 and 17, Maguire et al. discloses a method for controlling a clutch that driveably connects and input and an output as shown in figure 1, and which is controlled in the manner shown in figure 4, wherein the reference temperature is compared with a calculated clutch temperature whereupon the degree of clutch engagement is increased as disclosed in figures 2 and 3 as well as col. 3, ll. 12-21 and col. 4, ll. 3-29, thereby reducing the calculated temperature of the clutch by limiting the amount of slip.

With respect to dependent claims 18 and 19, please see col. 3, ll. 12-21 and 54-62 of Maguire et al., wherein it is taught that the clutch can be operated in a fully engaged mode, as well as the use of solenoids and fluid pressure for operating the degree of clutch engagement under control of a CPU.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salecker et al. (USPN 6,006,149) in view of Maguire et al. (USPN 6,095,946).

Salecker et al. discloses an actuating apparatus for a torque transmitting system (clutch), in which the temperature thereof is calculated or determined using an iterative process in which the temperature of the clutch is determined as a function of time from one instant  $t$ , to the next instant  $t + \Delta t$  (col. 2, ll. 34-40). Column 5 line 63 through col. 6, l. 11 of Salecker et al. discloses that the torque transmitting system (103) comprises an input side (107) and an output side (108), and that if there exists a difference in the RPM between the input side and the output side then there develops an energy input which is converted into friction heat, entailing a temperature rise. Additionally, col. 9, ll. 25-35 disclose preventing excessive slip in a torque transmitting system by means of a control unit (113) which can ascertain, calculate and/or determine whether or not increased (excessive) slip exists and then proceeds to initiate or carry out undertakings which are to prevent an excessive stressing and/or destruction of the torque transmitting system (clutch). While Salecker et al. does teach preventing excessive stressing or destruction of the torque transmitting system, it does not particularly teach "increasing the degree of clutch engagement sufficiently to reduce the calculated temperature of the clutch" when a calculated clutch temperature equals or exceeds the reference clutch temperature.

Maguire et al. teaches a method of temperature rise control for a disc type friction torque transmitting system in which column 3, ll. 12-21 particularly teach completely engaging or completely disengaging the clutch discs to avoid additional heating of the clutch system, where col. 4, ll. 23-29 further disclose that this transmission control is

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accomplished by keeping track of the temperature increase and mitigating any additional heating when the clutch temperature reaches or exceeds the desired clutch temperature limit as shown in figure 4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the clutch temperature threshold limit control as particularly taught by Maguire et al., within the context of the clutch temperature monitoring system of Salecker et al., because both are in the field of detecting / monitoring / calculating clutch temperature as it relates to transmission of torque through a slipping clutch arrangement, in which both Maguire et al. and Salecker et al. act to prevent excessive heat related stressing of the torque transmitting system by limiting or eliminating clutch slip when temperatures warrant.

With respect to claims 2 and 3, which relate to determining current clutch slip and determining first and second clutch torque magnitudes, please see col. 8, ll. 49-67 and col. 9, ll. 25-35, which teach clutch slip adjustment for torque transmission while limiting clutch slip, and wherein it would have been obvious to one of ordinary skill in the art of clutch control that clutch slip is eliminated when the clutch is fully engaged.

With respect to claim 4, which relates to repetitively calculating the temperature of the clutch and maintaining a running total of the change of clutch temperature over each interval, please see Figure 4 of Maguire et al., as well as col. 2, ll. 34-40 and column 3 of Salecker et al.

With respect to claim 5, which relates to repetitively calculating the clutch temperature as well as calculating a differential change in transmitted power over the successive intervals, determining the thermal mass of the clutch, etc., please see col. 3, ll. 9-44, wherein Salecker et al. discloses the temperature increase attendant greater clutch clip and torque transfer as it relates to the heat or thermal/heat capacity/mass of the clutch components.

With respect to claim 6, which relates to repetitively determining the magnitude of power transmitted to the clutch input and the magnitude of power transmitted from the clutch output, over successive intervals, please see figures 2 and 3 of Maguire et al.

With respect to claims 7 and 8, which relate to determining clutch gain, repetitively determining the magnitude of the clutch pressure at successive intervals, determining the average coefficient of friction for friction disc-spacer sets, determining the number of pairs of sets, determining the effective friction area, etc., please see figure 2 (and in particular #46) of Maguire et al., as well as col. 1, ll. 14-33 and col. 3.

With respect to claim 9, which relates to fully engaging the clutch if the clutch threshold temperature greater than the reference temp of claim 1, it would have been obvious to one of ordinary skill in the art at the time the invention was made to fully engage the clutch if it had been, or once it has been determined that, the clutch temperature is higher than a reference or limit value, in order to bring down the clutch temperature by eliminating the relative slip between the clutch surfaces.

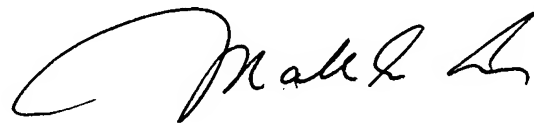


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Pipala whose telephone number is 571-272-1360. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ejp

A handwritten signature in black ink, appearing to read 'Matthew Luu', with a stylized flourish at the end.

**MATTHEW LUU**  
**PRIMARY EXAMINER**